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** This work was supported by the Russian Foundation for Basic Research (Research Project № 18-29-23045 мк).*

УДК 547.892.4

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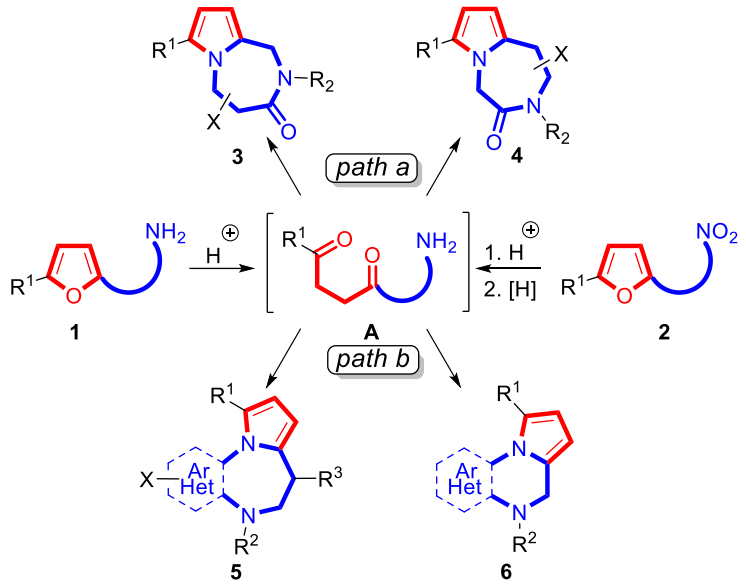
THE PAAL-KNORR REACTION IN THE SYNTHESIS OF 1,2-ANNULATED PYRROLES*

Keywords: Furan, Paal-Knorr synthesis, 1,4-Diketone, Domino reaction.

An original effective protocol for the synthesis of 1,2-annulated pyrroles has been developed. This new process features the simultaneous formation of both pyrrole and diazepine cores as a result of intramolecular Paal-Knorr reaction of 1,4-dicarbonyl compounds forming during an acid-catalyzed hydrolysis of the corresponding furans **1**. A wide variety of pyrrolo[1,2-*a*][1,4]diazepines **3** and pyrrolo[1,2-*d*][1,4]diazepines **4**, prospective pharmacological agents, was synthesized (*path a*) [1]. In addition to this, a simple and effective methods for the synthesis of substituted (het)arene-annulated pyrrolo[1,2-*d*][1,4]diazepines **5** and pyrrolo[1,2-*a*]quinoxalines **6**. The developed approach is based on the acid-catalyzed hydrolysis of substituted furans **2** with the formation of the corresponding 1,4-diketones followed by the key reductive cyclization with the formation of a broad range of nitrogen heterocycles **5**, **6** (*path b*) [2, 3].

The optimal reaction conditions were found, the scope and limitations of the developed method were defined. Cytotoxicity of synthesized 1,2-annulated pyrroles against cell lines HEK293T, VA13, MCF7, A549 and MCF10A was investigated. Research results will be presented in the report.



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** This work was supported by Russian foundation for basic research (project № 19-43-590007 p_a).*

УДК 547.786.1

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ONE-POT ПОЛУЧЕНИЕ 2-(3-ОКСОИНДОЛИН-2-ИЛ)-2-АРИЛАЦЕТОНИТРИЛОВ РЕАКЦИЕЙ ИНДОЛОВ С НИТРОАЛКЕНАМИ*

Ключевые слова: индолы, нитроалкены, фосфористая кислота, нитрилы.

Наша группа заинтересована в разработке каскадных гетероциклизаций нитросоединений с помощью кислот Бренстеда. Нами было показано, что нитроалкены могут быть использованы в качестве синтетических эквивалентов